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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,244	02/12/2004	Tsukasa Kuboshima	2018-847	4182
23117	7590	06/15/2005	EXAMINER	
NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			NGUYEN, TU MINH	
			ART UNIT	PAPER NUMBER
			3748	

DATE MAILED: 06/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/776,244

Applicant(s)

KUBOSHIMA ET AL.

Examiner

Tu M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 April 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5 and 7-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-11 and 13 is/are rejected.
- 7) ☒ Claim(s) 5 and 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. An Applicant's Amendment filed on April 25, 2005 has been entered. Claim 6 has been canceled; claims 1-5 and 7 have been amended; and claims 8-13 have been added. Overall, claims 1-5 and 7-13 are pending in this application.

#### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 7-10, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Udagawa (Japan Publication 2002-206419) in view of Frick et al. (U.S. Patent 5,329,818).

Re claims 1 and 8, Udagawa discloses a method for correcting measured differential pressure across a particulate filter and an exhaust emission control device and for an internal combustion engine (1) including a diesel particulate filter (3) disposed in an exhaust passage of the internal combustion engine for trapping exhaust particulates, and a pressure sensor (5, 6) interposed between a first pressure pipe communicating with the exhaust passage upstream of the diesel particulate filter and a second pressure pipe communicating with the exhaust passage downstream of the filter to detect a differential pressure across the diesel particulate filter to

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determine when to oxidize the particulates accumulated in the diesel particulate filter based on the detected differential pressure, which increases with the accumulation of the particulates, the device comprising:

- means (Figure 3) for setting a correction factor (I) and acquiring correction information by (a) reading output from the pressure sensor when the engine is not running, (b) determining offset correction factors (C) for removing offset errors of the pressure sensor, the offset errors being the difference between the read-out output from the pressure sensor and an output from the pressure sensor at the time when the pressure is zero, which should be constant irrespective of temperature changes; and

- means (see Figure 2) for reading the output from the pressure sensor when the engine is running for measuring a differential pressure across the diesel particulate filter and for correcting the output of the pressure sensor with the offset correction factor.

Udagawa, however, fails to disclose that a reading from the pressure sensor is sensitive to a sensor temperature and as such, the offset correction factors are further determined based on the sensor temperature.

As shown in Figures 1-5, Frick et al. teach that a pressure sensor such as the one used by Udagawa is sensitive to its temperature. As such, Frick et al. teach the use of a temperature sensor (227) to estimate a temperature of a pressure sensor (5). A table or map of offset correction errors ( $K_1$ ,  $K_2$ ) is generated based on a range of sensor temperatures. The corrected pressure reading of the pressure sensor is then determined based on the raw pressure reading corrected by the offset correction errors. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the pressure sensor taught by

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Frick et al. in the control device and method of Udagawa, since the use thereof would have timely regenerated the particulate filter by correctly determining when the filter is saturated.

Re claims 2 and 9, in the modified control device and method of Udagawa, the means for setting a correction factor stores each offset correction factors in association with a corresponding one of plural temperature ranges (see lines 40-50 of column 12 in Frick et al.).

Re claims 3 and 10, in the modified control device and method of Udagawa, the means for setting a correction factor replaces an earlier stored offset correction factor with a new offset correction factor when one is obtained for a given temperature range by the correction factor acquiring process.

Re claims 7 and 13, in the modified control device and method of Udagawa, the pressure sensor ((5) in Frick et al.) is a semiconductor pressure sensor.

4. Claims 4 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Udagawa in view of Frick et al. as applied to claims 3 and 10, respectively, above, and further in view of Clingman, Jr. et al. (U.S. Patent 5,115,687).

In the modified control device and method of Udagawa, the means for setting a correction factor obtains an offset correction factor that corresponds to a first temperature range by the correction information acquiring process, if another correction factor that corresponds to a second temperature range nearest to the first temperature range has already been obtained by the previously completed correction information acquiring process.

Udagawa, however, fails to disclose that if there is one or more temperature ranges between the first and second temperature ranges, then the offset correction factor of the

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temperature range sandwiched between the first and second temperature ranges is calculated by interpolation between the offset correction factors of the first and second temperature ranges.

As indicated on lines 52-54 of column 10 and lines 14-16 of column 11, Clingman, Jr. et al. teach that it is conventional in the art to perform a linear interpolation to obtain an intermediate value  $K$  for use in expression (28). Value  $K$  is a function of the ratios  $d/D$  and is supplied in known tables. So in Clingman, Jr. et al., if a given value of  $d/D$  is sandwiched between two known  $d/D$  values in a table, a linear interpolation is performed to obtain a value  $K$  corresponding to the given value of  $d/D$ . It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching taught by Clingman, Jr. et al. in the modified device and method of Udagawa, since the use thereof would have been routinely practiced by those with ordinary skill in the art.

#### *Allowable Subject Matter*

5. Claims 5 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### *Response to Arguments*

6. Applicant's arguments with respect to the reference applied in the previous Office Action have been fully considered but they are not persuasive.

In response to applicant's argument that it is improper to combine Frick et al. with Udagawa because Udagawa does not offer any teaching or suggestion to offset errors in the

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differential pressure sensor as a function of its temperature (page 10 of Applicant's Amendment), the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this case, Frick et al. realize that a conventional differential pressure sensor exhibits an error due to its temperature changes. By correcting this error, Frick et al. are able to obtain more correct readings of the pressure sensor. Thus, if Udagawa employs this teaching by Frick et al. to correct the readings of the differential pressure sensor due to its temperature changes, the determination of when the particulate filter is fully saturated is more exact; and a regeneration of the filter becomes more timely to prevent a loss in engine performance due to a high back pressure in the exhaust pipe.

### *Conclusion*

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

*Communication*

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (571) 272-4862.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Tu M. Nguyen*

TMN

Tu M. Nguyen

June 13, 2005

Primary Examiner

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